

A NEW GENUS OF MAYFLIES FROM THE MIOCENE
OF FLORISSANT, COLORADO.

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Among some fossil insects from Florissant kindly loaned by Director J. D. Figgins of the Colorado Museum of Natural History, I find a very fine Ephemeroidea belonging to the Siphonuridæ* and apparently referable to an undescribed genus. Banks, in 1907, treated *Chirotonetes* and *Ameletus* of Eaton as synonyms of *Siphonurus*. On this broad basis the fossil might also be referred to *Siphonurus*; but more recent authors have recognized Eaton's segregates, and from this point of view *Siphurites* forms a sufficiently valid genus. In the description, I have followed Tillyard's revised nomenclature†, but it should be understood that Tillyard's first and second cubitus are Comstock's first and second anals (following Miss Morgan); Tillyard's media is Comstock's cubitus, and Comstock's media is considered part of the radius. In Needham's key to the genera‡, *Siphurites* runs out on p. 25 at ff, forming a third section as follows:

fff. The intercalaries between the first and second anal veins (of Needham and Comstock) represented by a pair of veins, the first simple, the second forking, from the first anal to the wing margin, and a third vein which bends and runs a long course parallel with the first anal, emitting below about nine simple veins to the margin. *Siphurites*.

Siphurites new genus.

Anterior wings with costa somewhat arched basally, the costal area broadened, so that its depth is 1 mm., gradually decreasing apicad; transverse veins of costal area numerous

*Tillyard writes Siphuridae, but Eaton named the type genus *Siphonurus* in 1868, and was not at liberty to alter it to *Siphurites* in 1871.

†Transactions New Zealand Institute 54. (1923) p. 227.

‡Bull. 86, New York State Museum (1905) pp. 23-26.

in subbasal region, forming cells which are twice as high as long, but beyond they become widely spaced, forming cells which are much longer than high; subcosta in subbasal region very close to radius, gradually diverging from it, so that near middle of wing the subcosta is equally distant from costa and radius; radial sector with four very oblique branches, the first forking a little over 6 mm. from end, and including within the forks a supplementary longitudinal vein; the second and third branches of the radial sector originate close together, but the origin of the third, though delicate, is not obsolete; the fourth, arising about 7.6 mm. from end of wing, starts downward at nearly a right angle with the sector, and then bends distad; between it and the sector are three supplementary veins, the first long, the two lower shorter; media branching about 3.7 mm. from base of wing, the fork very acute, and between the branches a long supplementary vein, and near the margin four short very delicate supplementary veins, two above and two below the main supplement; cubitus with main (upper) part strong, slightly curved subapically, emitting about five cross veins to the strongly arched second cubitus, then two long veins (the second forked) to margin, then, beyond level of end of second cubitus, a vein which curves distad travelling to the margin parallel with the first cubitus, and emitting about nine oblique veins below. Hind wings developed, but the details cannot be made out. Type the following.

Siphurites explanatus, sp. nov.

Length from front of head to end of abdomen 21 mm.; expanse 44 mm.; length of anterior wings 21 mm., the width about middle 7.7 mm.; eyes to base of wings 1.7 mm., the prothoracic region short and broad (it is considerably longer in *Ephemera howarthi*.) Head and thorax brown; wings hyaline, with pale brown veins; a slight suggestion of mottling along costa

Miocene shales of Florissant.

Scudder described five species of Ephemerid nymphs from Florissant; so far as can be seen, they suggest the genera *Ephe-*

merella, *Hexagenia*, *Potamanthus* and *Baetis*. Two species have been described from adults. *Ephemera exsucca* Scudd. has an expanse of only 16 mm.; *E. howarthi* Ckll has three strong tails, as in true *Ephemera*. In the somewhat arched costa and broad costal area *Siphurites* agrees with *Cronicus anomalus* (Pictet) from Baltic amber, but is otherwise quite different.

It is worthy of note that in the Permian *Protereisma* and *Protechma* of Sellards the first cubitus emits a couple of veins at very acute angles (not curved at base as the long branch of *Siphurites*), and these proceed distad to the margin, subparallel with the first cubitus. Thus the special feature of *Siphurites* may be regarded as primitive. The Permian insects constitute a distinct family Protereismatidæ, having the lower wings almost or quite as large as the upper.